Paper No. 57

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte MAIN CHANG

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Appeal No. 2002-0972
Application 08/816,466

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ON BRIEF

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Before OWENS, WALTZ and LIEBERMAN, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal is from the final rejection of claims 1-4, 6-9, 12-14 and 56. Claims 46-50, which are all of the other claims remaining in the application, stand withdrawn from consideration by the examiner as being directed toward a nonelected invention.

THE INVENTION

The appellant claims a method for making a supported metallocene catalyst system. Claim 1 is illustrative:

1. A method for forming a supported catalyst system comprising the steps of:

(a) introducing a porous inorganic carrier to a vessel having a starting pressure,

(b) depressurizing the vessel,

(c) introducing into the vessel a solution comprising a metallocene catalyst component and an activator while maintaining the depressurized pressure from step (b)

(d) pressurizing the vessel, and

(e) recovering the supported catalyst system,
steps (a) and (b) are performed before step (c).

THE REFERENCES

Uvarov et al. (Uvarov)	4,246,134	Jan. 20, 1981
Nowlin et al. (Nowlin)	5,332,706	Jul. 26, 1994

THE REJECTION

Claims 1-4, 6-9, 12-14 and 56 stand rejected under 35 U.S.C. § 103 as being unpatentable over the combined teachings of Nowlin and Uvarov.

OPINION

We reverse the aforementioned rejection. We need to address only the sole independent claim, i.e., claim 1.

Nowlin discloses a method for forming a supported catalyst system by contacting a solid, particulate porous carrier, which preferably is inorganic and most preferably is silica, with a solution comprising methylalumoxane (the appellant's activator) and preferably also comprising a metallocene (col. 3, lines 12-13 and 26-29; col. 6, lines 50-51; col. 7, line 7; col. 8, lines 14-16). Nowlin does not disclose the appellant's depressurizing and pressurizing steps.

Uvarov discloses a supported catalyst system consisting of 1) a catalyst which is a compound of a transition metal of groups IV-V, preferably titanium or vanadium, advantageously in the form of chlorides thereof, deposited onto a polymeric carrier comprising a macroporous copolymer of vinyl and divinyl monomers having a specific surface area of 30 to 700 m^2/g, and 2) an organoaluminum co-catalyst (col. 1, lines 57-65; col. 2, lines 40-42).[1]

[1] Uvarov defines "macroporous copolymer" as "a two-phase system, therein the polymeric compound is pierced with communicating cavities (pores) capable of being filled with an external medium upon submersion thereinto" (col. 1, line 66 - col. 2, line 2).

Regarding the preparation of the catalyst system, Uvarov teaches (col. 3, lines 8-23):

> To obtain a catalyst based on titanium chloride, the carrier is treated with titanium chloride or a solution thereof in vacuum or in the atmosphere of an inert gas at a temperature within the range of from -70° to +180°C.
>
> It is possible to prepare a catalyst based on titanium chloride by way of treatment of the carrier in succession or in combination with titanium chloride and an organo-aluminum compound (or with solutions thereof) in vacuum or in the atmosphere of an inert gas at a temperature within the range of from -70° to +180°C. The resulting catalyst is dried in vacuum at a temperature of 80° to 180°C.
>
> To prepare a catalyst based on vanadium chloride, the carrier is treated with vapors or solutions of vanadium chloride and dried in vacuum.

The examiner argues that one of ordinary skill in the art would have recognized that when Uvarov drys his catalyst by heating it under vacuum in a flask (example 1), the pressure in the flask increases and, consequently, the solution flows to a region of lower pressure, namely, the catalyst pores (answer, pages 5-6). Therefore, the examiner argues, if Uvarov's process were applied to Nowlin's catalyst, the appellant's claimed invention would result (answer, page 5). Motivation for combining the teachings of these references, the examiner argues,

would have been to obtain a highly useful method for making a supported olefin polymerization catalyst (answer, pages 5-6).[2]

The examiner has not established that Uvarov does not adjust the vacuum during the heating step such that the pressure remains constant. Even if there is no pressure adjustment, the examiner has not established that there is a region of higher pressure and lower pressure in Uvarov's flask. It reasonably appears that both the catalyst and the solution within the flask are at the same pressure.[3]

Thus, the examiner has not established that one of ordinary skill in the art would have considered Uvarov's vacuum to be anything more than an alternative to Uvarov's inert gas atmosphere, i.e., another way of providing a nonreactive atmosphere. The examiner has not established that such an atmosphere would have been desired by one of ordinary skill in

[2] The examiner further argues that there would be an expected benefit of the catalyst not fouling the reactor (answer, page 5), but this is a benefit of Nowlin's catalyst (abstract) even if Uvarov's teaching is not combined with that of Nowlin.

[3] The examiner argues that "[t]he present invention is in essence quite simple. An increase in the gas pressure above a solution is used to drive that solution into a porous material that is immersed in the solution" (answer, page 6). The examiner alternatively should consider viewing the function of the appellant's vacuum as being to suck air out of the catalyst pores so that this air does not impede the passage of the solution into the pores.

the art when making Nowlin's catalyst system wherein the catalyst is a metallocene rather than Uvarov's group IV-V transition metal.

For the above reasons we conclude that the examiner has not carried the burden of establishing a *prima facie* case of obviousness of the appellant's claimed invention.

DECISION

The rejection of claims 1-4, 6-9, 12-14 and 56 under 35 U.S.C. § 103 as being unpatentable over the combined teachings of Nowlin and Uvarov is reversed.

REVERSED

TERRY J. OWENS Administrative Patent Judge	)
THOMAS A. WALTZ Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
PAUL LIEBERMAN Administrative Patent Judge	)

Univation Technologies, LLC
5555 San Felipe, Suite 1950
Houston, TX 77056

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